

CHANGES OBSERVED IN THE SPAWNING POPULATION OF LAKE TROUT OF YELLOWSTONE LAKE AFTER A DECADE OF MECHANICAL REMOVAL EFFORTS

Philip Doepke, Patricia E. Bigelow, Brian D. Ertel, Todd M. Koel, and Daniel L. Mahony,
USDI National Park Service, Yellowstone National Park, PO Box 168,
Mammoth Hot Springs, WY 82190, philip_doepke@nps.gov

Lake trout a predominantly piscivorous fish were officially documented in Yellowstone Lake in 1994. Yellowstone Lake contains the world's largest lentic population of Yellowstone cutthroat trout. Spawning run counts and index netting catch of Yellowstone cutthroat trout decreased steadily starting in 1990 and 1996 respectively. Bioenergetic research determined individual adult lake trout could eat an average of 42 cutthroat trout annually. To lessen the impact lake trout were having on cutthroat trout, efforts to mechanically remove lake trout began immediately after discovery in 1994 and continue at present. Age analysis using otoliths collected from lake trout captured on spawning grounds from 1997 through 2005 has shown the spawning population is relatively young and fast growing. Mature lake trout ranged in age from 6-21 years in 1998 and 4-17 years in 2005. During the August-October spawning season mean total length of mature lake trout caught on spawning grounds or staging areas has progressively decreased from 1996 to 2005; mature males from 601 to 517 mm, mature females from 675 to 555 mm. Excellent growth rates, relative young age at maturation, and few old fish indicate removal efforts are impacting this population.